

Claims

- [c1] An electronic module comprising a motherboard, a multichip module mounted to the motherboard and a circuit unit connected to the multichip module, the circuit unit comprising a flexible substrate, instrumentation circuitry mounted on the flexible substrate, and a connector coupled to the flexible substrate, the flexible substrate having signal lines that electrically communicate with the multichip module, the instrumentation circuitry, and the connector, a portion of the flexible substrate being between the multichip module and the motherboard and permitting electrical communication therebetween, the instrumentation circuitry not being mounted directly to the motherboard so as not to require space on the motherboard and thereby permit elimination of the circuit unit without altering the motherboard.
- [c2] The electronic module according to claim 1, further comprising a housing in which the motherboard, the multichip module, the flexible substrate, and the instrumentation circuitry are housed, wherein the instrumentation circuitry is mounted directly to the housing and spaced apart from the motherboard.

- [c3] The electronic module according to claim 2, wherein the connector is supported outside the housing by the flexible substrate.
- [c4] The electronic module according to claim 1, wherein the instrumentation circuitry is mounted to the multichip module.
- [c5] The electronic module according to claim 4, further comprising a housing in which the motherboard, the multichip module, the flexible substrate, and the instrumentation circuitry are housed, the connector being supported outside the housing by the flexible substrate.
- [c6] The electronic module according to claim 4, wherein the multichip module and the instrumentation circuitry are individually encased in overmolded bodies.
- [c7] The electronic module according to claim 1, further comprising a housing in which the motherboard, the multichip module, the flexible substrate, and the instrumentation circuitry are housed, wherein a portion of the flexible substrate to which the instrumentation circuitry is mounted is attached to the housing and the instrumentation circuitry is spaced apart from the motherboard.

[c8] The electronic module according to claim 7, wherein the connector is supported outside the housing by the flexible substrate.

[c9] The electronic module according to claim 1, further comprising an overmolded body encasing the motherboard, the multichip module, the flexible substrate, and the instrumentation circuitry, the instrumentation circuitry being suspended within the overmolded body so as to be spaced apart from the motherboard, the connector projecting outside the overmolded body.

[c10] The electronic module according to claim 1, wherein the instrumentation circuitry comprises a printed circuit board attached to the flexible substrate.

[c11] A method of developing an electronic module comprising a motherboard and a multichip module mounted to the motherboard, the method comprising the steps of: providing a developmental unit of the electronic module, the developmental unit comprising the motherboard, the multichip module, and a circuit unit connected to the multichip module, the circuit unit comprising a flexible substrate, instrumentation circuitry mounted on the flexible substrate, and a connector coupled to the flexible substrate, the flexible substrate having signal lines that electrically communicate with the multichip module,

the instrumentation circuitry, and the connector, a portion of the flexible substrate being between the multichip module and the motherboard and permitting electrical communication therebetween, the instrumentation circuitry not being mounted directly to the motherboard so as not to require space on the motherboard; and then producing a production unit of the electronic module by eliminating the circuit unit without altering the motherboard.

- [c12] The method according to claim 11, wherein the step of providing the developmental unit comprises placing the motherboard, the multichip module, the flexible substrate, and the instrumentation circuitry in a housing, and mounting the instrumentation circuitry directly to the housing so as to be spaced apart from the motherboard.
- [c13] The method according to claim 12, wherein the step of providing the developmental unit further comprises supporting the connector outside the housing with the flexible substrate.
- [c14] The method according to claim 11, wherein the step of providing the developmental unit comprises mounting the instrumentation circuitry directly to the multichip module.

- [c15] The method according to claim 14, wherein the step of providing the developmental unit further comprises placing the motherboard, the multichip module, the flexible substrate, and the instrumentation circuitry in a housing, and supporting the connector outside the housing with the flexible substrate.
- [c16] The method according to claim 14, wherein the step of providing the developmental unit further comprises individually encasing the multichip module and the instrumentation circuitry in overmolded bodies.
- [c17] The method according to claim 11, wherein the step of providing the developmental unit comprises placing the motherboard, the multichip module, the flexible substrate, and the instrumentation circuitry in a housing, and attaching a portion of the flexible substrate to the housing so that the instrumentation circuitry is spaced apart from the motherboard.
- [c18] The method according to claim 17, wherein the step of providing the developmental unit further comprises supporting the connector outside the housing with the flexible substrate.
- [c19] The method according to claim 11, wherein the step of providing the developmental unit further comprises en-

casing the motherboard, the multichip module, the flexible substrate, and the instrumentation circuitry in an overmolded body, the instrumentation circuitry being suspended within the overmolded body so as to be spaced apart from the motherboard, the connector projecting outside the overmolded body.

[c20] The method according to claim 11, wherein the step of providing the developmental unit comprises mounting the instrumentation circuitry to a printed circuit board and attaching the printed circuit board to the flexible substrate.

[c21]